System And Method For Shared Billing Of Telephone Calls

Technical Field

This invention relates to the area of telecommunications, and more specifically, to a system for providing shared billing for telephone services.

Background of the Invention

Competition for long distance telephone service (and now even mid-distance telephone service) is fierce. Such competition will increase as the local operating companies are permitted to enter the long distance business.

Carriers (as long distance telephone service providers are commonly called) offer packages which generally includes discounts in order to entice customers to subscribe to that particular carrier. For example, a subscriber may select a country or area (area code or plurality of area codes) to which he or she makes a majority of long distance calls. For a small monthly fee, a subscriber receives a discount to all calls made to that area. Other packages provide a discount to certain telephone numbers of frequently called individuals. In most of these plans, the calling party pays the entire bill, discounted or not.

In other situations, the called party pays for the call. Examples include collect calls, "800" services for businesses, and even personal 800 services where the called party pays for the entire call, and any premium associated with the service.

One interesting feature of both of the above-described payment systems is that the calling party controls who pays. the calling party pays for any calls he or she makes under any carrier's calling plan, or the calling party decides not to pay and uses an "800" or collect service.

There are many situations, however, in which it is desirable to "split the bill"; that is, have each party pay part of the charges. For example, a parent and adult children generally are in a position to share the cost of calls and, in some cases, it is desirable to share such costs. Illustratively, an elderly parent on a fixed income living in an area such as Phoenix, Arizona may need to call an adult child living in Chicago regularly. The parent may, even with discount packages, find the cost of such calls too expensive. On the other hand, the adult child cannot accept collect calls for all of the calls made from Phoenix to Chicago, which would generally be at the highest of any carrier's rates. In another example, businesses dealing regularly with each other may prefer to split the bill in order to allocate costs without having to "settle up" later.

recognizes the code and queries a database (using the calling and called number) in order to determine if both the calling and the called parties subscribe to the same carrier. If they both subscribe to the same carrier, then the called party receives a confirmation tone, indicating that the cost of the call will be split 50/50. If there are two different carriers involved, then the called party will hear a denial tone, indicating that there will be no sharing of the cost of the telephone call. Again, after the call is completed, the billing system of the called party notifies the billing system of the calling party of the shared billing and allocations are made so that when the next billing cycle occurs, each party is billed for 50% of that particular call. In this manner, there need not be presubscription to a particular service in order to split the cost of long distance telephone calls.

Brief Description of the Drawings

A more complete understanding of the invention may be obtained from the consideration of the following description in conjunction with the drawings in which:

FIG. 1 is a block diagram of a telephone network in which this invention may be implemented;

FIG. 2 is a diagram of a table where a subscriber has preselected telephone numbers that he will share billing with and the allocation;

FIG. 3 is a diagram of a reverse lookup table of FIG. 2, wherein a caller can determine which parties have allowed shared billing;

FIG. 4 is a diagram of a table of subscribers to a preselected carrier;

FIG. 5 is a flow chart of the operations of the telephone switching systems according to FIG. 1 according to one exemplary embodiment of this invention; and

FIG. 6 is a flow chart of another exemplary embodiment in this invention.

Detailed Description

FIG. 1 illustrates a national implementation of a carrier's long distance network. In this implementation, there is a switching network 10 which interconnects a plurality of long distance switches 14, 16, and 22. Long distance switches 14, 16 and 22 are also interconnected by a signaling network 24 for transmitting messages, routing data, etc., as is known in the art. Also, as is known in the art, there are a plurality of subscribers to the long distance carrier represented by telephones 32, 34, and 40. Each of the plurality of telephone subscribers is connected through to the long distance carrier by way of a local central office 52, 54,

notifies billing system 70 of an outgoing call and sets up the call through signaling network 24 and switching network 10 to long distance switch 22. Long distance switch 22 extends the call to local office 60 and to telephone 40. When telephone 40 goes off-hook, long distance switch 14 is notified and billing system 70 is caused to start recording network usage. When one of telephones 32 and/or 40 go on-hook, switch 14 is notified which, in turn, notifies billing system 70.

At this point, according to the exemplary embodiment of this invention, billing system 70 sends a message through signaling network 24 to ANI node 28 in order to query database 26 regarding this call. Billing system 70 sends the calling and called number and database 26 uses the called number to perform a lookup in one of its databases, as in the databases of FIG. 2. If the called number (708-555-1234) is found, then the database looks in the table of allowed calling numbers to determine if this particular called number allows a split billing for this calling number (602-555-4321). In this instance, database 26 finds the telephone number of the calling party (602-555-4321) and determines that the share ratio is 50/50. Optionally, a check may be made to determine if the called number has toggled split billing on or off for this particular number. If split billing is still allowed for this number, then database 26 through ANI node 28 sends the sharing information back to billing system 70 and billing system 70 sends the information regarding the cost to billing system 72. Alternatively, if no sharing information is found, then a message to that effect is sent back to billing system 70, and billing system 70 bills the entire call to the calling telephone.

When bills are generated for telephones 32 and 40, billing systems 70 and 72, respectively, allocate a portion of the phone call or phone calls made between the two phones to each respective party. Thus, calls may be easily shared across a carrier's network. Of course, the proportions do not have to be 50/50. They could be 20/80, 70/30, or whatever the parties agreed to. Thus, the parties would not have to worry about who initiated how many calls and how to achieve parity. This is especially beneficial for elderly people who can keep in touch with their children or others while the called party voluntarily pays part of the cost.

In this exemplary embodiment, both the calling and the called number subscribe to the same long distance carrier. If they do not, there is potential confusion among the various carriers as to which call packages apply and how much of the bill is applied to the particular calling packages. Therefore, when telephone 40 (with telephone number 708-555-1234) sets up a database entry which permits shared billing (by dialing an "800" number, for example), database

lookup in the carrier subscriber table of FIG. 4 and determines, for purposes of this example, that both parties do subscribe to AT&T. The ANI node 28 sends a message back through signaling network 24 to long distance switch 22, indicating such, and long distance switch 22 sends a message to billing system 72, including the calling and called number, that this is to be a shared-billing call. After the call is complete (one or the other party hangs up), billing system 72 is notified by long distance switch 22, and billing system 72 communicates with billing system 74 by way of signaling network 24 to cause an allocation of the bill as above. Thus, users do not have to subscribe or pre-setup tables for shared billing.

Turning now to FIG. 5, a flow chart for controlling the billing system is shown. Processing starts in circle 200 where a "1+" call is dialed from a telephone. Processing continues to action box 202 where the call is routed to the long distance carrier's originating switch. Such routing includes information such as the calling number and the called number. Processing continues to action box 203 where the call is routed through the network to the terminating network switch. The call is delivered in action box 204 to the local switch and ringing is established at the local telephone. A determination is made in action box 205 whether the call is answered. If it is not, the call is abandoned normally in action box 206.

If the call is answered in decision diamond 205, then processing moves to action box 207 where timing is begun on the call. Timing continues until end decision diamond 208 where a disconnect has been received. Once the disconnect has been received, the time charges are recorded and, in action box 209, a message is sent to the central database, including the called and calling number. A lookup is performed in the central database, as described above, to determine in decision diamond 210, if shared or split billing is accepted by this called number for this calling number. If it is not, then processing proceeds to action box 211, where normal billing processing is used.

If, in decision diamond 210, split billing is accepted by this called number for this calling number, then a message is sent back to the calling number's billing system, and, in action box 212, the time charges are allocated per the allocation found in the database.

Turning now to FIG. 6 and a further exemplary embodiment is shown where shared billing is spontaneously established. Processing begins in circle 300 where a "1+" call is dialed. The call is routed to the calling party's long distance carrier in action box 302, and processing continues to action box 304, where the call is routed to the carrier's terminating switch. Processing continues to decision

The invention claimed is:

1. A method for use in a telephone network for providing network usage allocation of usage charges for billing purposes, said method comprising the steps of:

initiating a telephone call from a first party via a switching system,

completing said telephone call to one or more destination parties through said telephone network;

recording usage at said switching system for said telephone call; and

said switching system determining whether said telephone call receives shared billing services; and allocating charges for said recorded usage according to predetermined proportions to each party in said telephone call.

2. A method in accordance with claim 1 wherein each of said parties is associated with a telephone number, said step of determining whether said telephone call received shared billing service comprises comparing said telephone numbers to a predetermined record in a central database.

3. A method in accordance with claim 2 wherein if one of said telephone numbers is not in said predetermined record in said switching system, denying said shared billing.

4. A method in accordance with claim 1 wherein each party is associated with a switching system, and said first switching system sending said recorded usage allocation to a billing system associated with each of said plurality of switching systems.

5. A method for use in a telephone network for sharing the cost of telephone calls, said method comprising the steps of:

initiating a telephone call from a first party to a destination party, through a first switching system; completing said telephone call through a second switching system;

said first switching system recording usage of said telephone call;

said destination party signaling to said second switching system to share the cost of said call;

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Abstract

When a long distance call originates, it is sent to an originating toll switch. The call is extended to the terminating toll switch which completes the call as completed to the destination telephone. The call is then timed and such timing information is recorded. After the call terminates, the billing system uses the number of the calling telephone and the destination telephone number to query a database to determine whether this call receives shared call billing. If it does, the billing records are recorded accordingly.

FIG. 2

CALLED NUMBER	ALLOWED CALLING NUMBERS	ALLOCATION	ACTIVE
708-555-1234	212-555-2152	70/30	Y
			N
	602-555-4321	50/50	Y

FIG. 3

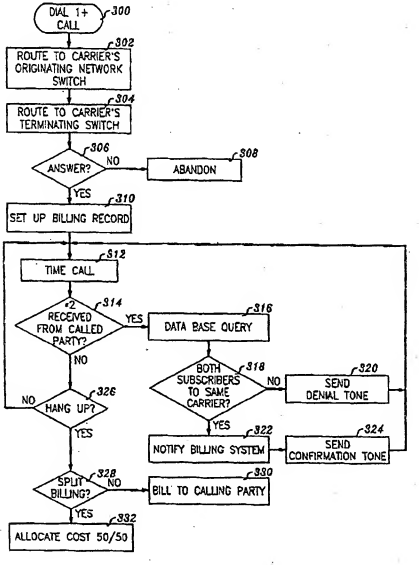
CALLING NUMBER	ALLOWED SHARED BILLING	ALLOCATION	ACTIVE
212-555-2152	708-555-1234	70/30	Y
	515-555-1212	50/50	Y

FIG. 4

CARRIER SUBSCRIBERS
414-555-0977
602-555-4321
708-555-1234

Kirby, Eades, Gale, Baker

FIG. 6



Kirby, Eckes, Gale, Beiser